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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/934,590 | 08/23/2001 | Hyong-Gon Lee | 06192.0205.NPUS00 | 8630 |

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McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102

EXAMINER

NGUYEN, FRANCIS N

ART UNIT

PAPER NUMBER

2674

DATE MAILED: 02/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|----------------------------|------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/934,590 | LEE, HYONG-GON |
| | Examiner FRANCIS NGUYEN | Art Unit 2674 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on ____.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) 5-13 is/are allowed.
 6) Claim(s) 1 is/are rejected.
 7) Claim(s) 2-4 is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ . | 6) <input type="checkbox"/> Other: ____ . |

DETAILED ACTION

Claim Objections

1. Claims 1-2 are objected to because of the following informalities: incorrect comma at end of claim 1 (page 22), incorrect word "inveting" (claim 2, line 5, page 23), incorrect number "8" (claim 13, page 27) instead of 12 . Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Akiyama et al. (US Patent 5,977,940).

As to claim 1, Akiyama et al. discloses a liquid crystal display, comprising:

a scan signal line (gate line 9 Gn shown in figure 1A) for supplying scanning signals to pixels;

a source signal line (signal line Sm 8 shown in figure 1A) for supplying image pixels to a third electrode from a first electrode connected to the source signal line;

a pixel switch (switch 801 show in figure 8) for outputting the image signals to a third electrode

a control signal line unit respectively including a first control signal line (VR ouputting from reference voltage waveform generating circuit 905 show in figure 9) for transmitting a first

control signal line to all pixels, and a second control signal line (VCS outputting from circuit 907 shown in figure 9) for transmitting a second control signal to all pixels
a liquid crystal unit (liquid crystal layer 5, column 10, lines 29-30) for transmitting or blocking light according to voltage difference between the image signals and the second power;
a memory cell unit (memory 803 shown in figure 8) for receiving the first control signal and the second control signal from the control signal unit.

However, Akiyama et al. fails to teach a power unit for respectively supplying first power and second power to all pixels . Note Akiyama et al. teaches reference voltage waveform generating circuit 905 shown in figure 9 for driving all pixels (column 6, lines 40-48). It would have been obvious to a person of ordinary skill in the art at the time of the invention to utilize the apparatus of Akiyama et al., then provide a power unit for supplying first and second power to all pixels because it would provide stable driving of display resulting in high quality display.

Allowable Subject Matter

Claims 2-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 2 , 8 , 12-13, none of prior art teaches an operation mode image signal output by the third electrode of the pixel switch transmitted to the liquid crystal unit, when the first control signal is in low state and the second control signal is in high state, and when the first control

signal is in high state, either a still mode image signal output by the third electrode of the pixel switch or its inverting signal is transmitted to the liquid crystal unit as the second control signal periodically repeats the low and high states according to characteristics of the LCD panel.

As to claim 3, none of prior art teaches a liquid crystal display wherein a memory cell unit comprises a first inverter circuit having an nTFT and a pTFT, a second inverter circuit having an nTFT and a pTFT, a push nTFT, a pull nTFT, an operation nTFT and a still pTFT.

As to claim 4, none of prior art teaches a liquid crystal display wherein the control signal line unit transmits respective control signals sequentially delayed by a buffer circuit to corresponding pixel areas of the LCD panel is divided into at least two portions either in horizontal direction or in vertical direction

As to claims 5-11, none of prior art teaches a low power liquid crystal display comprising a level shift unit for receiving a second control signal, lifting the high state by as much as the second power, generating an inverting signal, and outputting the inverting signal.

CONCLUSION

4. The prior art made of record but not relied upon is pertinent to Applicant's disclosure

US Patent 5,945,972 Okumura et al.

US Patent 6,005,558 Hudson et al.

US Patent 5,471,225 Parks

Reference Okumura et al. is made of record as it discloses a display device wherein each pixel comprises a memory cell unit.

Reference Hudson et al. is made of record as it discloses a display device wherein each pixel comprises a memory element

Reference Parks is made of record as it discloses a liquid crystal display with integrated frame buffer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **FRANCIS N NGUYEN** whose telephone number is **703 308-8858**. The examiner can normally be reached during hours 8:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **RICHARD A HJERPE** can be reached at 703 305-4579.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service whose telephone number is (703) 306-0377.

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February 10, 2003

FRANCIS N NGUYEN
Examiner
Art Unit 2674